CONSTRUCTION SPECIFICATION

NATURAL RESOURCES CONSERVATION SERVICE

POND SEALING OR LINING, COMPACTED CLAY TREATMENT

1. Scope

The work shall consist of compacting clay soil to construct a soil liner to control seepage in a pond or waste impoundment.

2. Materials

Unless otherwise specified, the clay soil shall be in-situ materials or clay soil from a designated borrow source. The clay soil shall contain no frozen soil, snow, ice, sod, organic materials such as roots, vegetation, manure, or other perishable materials. Rock particles of a size that would interfere with mixing and compaction shall be removed prior to treatment operations.

3. Equipment

All equipment necessary for the proper construction of the work shall be on the work site prior to the start of the clay liner installation operations. If addition of water is anticipated to achieve the specified moisture content and liner density, a water truck or other suitable methods for applying water shall be available prior to beginning work.

4. Subgrade Preparation

If in-situ soils are to be used for the compacted liner, the subgrade shall be excavated to the elevation of the surface of the lowest compacted layer, (about 6 inches above the planned liner bottom).

If the compacted liner is to be constructed of hauled-in clay, the subgrade shall be excavated to the bottom elevation of the planned liner.

The subgrade surface shall be smoothed to eliminate ridges and depressions in order to facilitate construction of a smooth compacted liner of uniform thickness. If the liner is to be constructed of hauled-in material, the subgrade shall be lightly disked to facilitate bonding of the two materials and lightly moistened if the moisture content of the subgrade is more than 2 percentage points below optimum. Free surface water shall not be present prior to placing the first layer of fill.

5. Placement

If in-situ material is to be used for the liner, the bottom layer shall be thoroughly disked to a depth of 6 inches, resulting in a loose layer thickness of approximately 9 inches. Water shall be applied to the loose soil, if necessary, to bring the soil moisture to the specified content. If the soil moisture is too high to achieve the specified density then it shall be disked and allowed to dry until the moisture content is lowered sufficiently to allow compaction. In no case shall the moisture content be allowed to drop below the specified minimum level at the time of compaction.

If the liner is to be constructed of hauled-in material, the first layer shall be placed and spread to a loose thickness that can be effectively compacted to the specified density by the available equipment. In no case shall the loose layer thickness exceed 9 inches. The moisture content of the loose soil layer shall be adjusted as described in the above paragraph.

6. Compaction

Each compacted lift shall be uniformly dense and relatively free of large depressions or dimples. Where a smooth wheel roller or other type of non-penetrating compaction equipment is used, the surface of each layer shall be lightly disked to achieve bonding with the subsequent overlying layer.

The degree of compaction and the moisture content of the clay liner material at the time of compaction shall not be less than specified below for the selected method.

Method 1 - Each layer of the clay liner shall be compacted to the minimum density and moisture content specified for this job.

Method 2 - Each layer of the clay liner shall be compacted by the specified number of passes of the type and weight of roller or other equipment specified for this job, or by an approved equivalent method. Each pass shall consist of traversal by the wheel or drum over the entire surface of the layer. The moisture content at the time of compaction shall be such that the material, when kneaded by hand, will form a ball that does not readily separate when struck sharply with a pencil and will not extrude from the hand when squeezed tightly.

7. Protective Cover

A protective cover of soil, if required, shall be applied to the surface of the compacted clay liner as soon as practical after the uppermost lift has been compacted. The protective layer shall be installed in one or more layers and have a compacted thickness as specified for this job. Compaction and moisture content of the protective layer shall be as specified for this job. Immediately after compaction of the compacted liner is completed, the surface shall be kept moist until the protective cover is in place. The application of water required to keep the surface moist shall be accomplished in a manner that does not cause erosion to the liner surface or ponding of water on the liner.

Other types of protective cover shall be installed as specified for this job.